

# Exploring the Perceptions of Tertiary Students' Perceptions and Attitudes towards Environmental Sustainability

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## *Abstract*

Sustainability refers to utilising the earth's natural resources wisely to meet the necessities; also to save the resources for future generations. The ever increasing world population and free trade policies have resulted in the exploitation of resources and has increased effluence stresses as well. This paper focuses on empirically surveyed perceptions of tertiary students regarding sustainability, obtained from a longitudinal study. The first study was executed in 2007 and 132 responses were obtained. The second survey in 2010 was distributed to undergraduate and post graduate students and 92 questionnaires returned. The results, based on a comparison of the two surveys, revealed that there are differences in thinking between age groups younger than 25 and 45 years and older. There are no significant differences in other areas. Innovative tertiary institutions should devote at least one lecture session per course of all tertiary students to create an awareness of their contribution towards sustainability.

**Keywords:** Attitudes; Perceptions; Environment; Sustainability

## Introduction

Current tertiary students are the future of New Zealand. They will be the leaders of tomorrow and it is important for a tertiary institution to determine what their perceptions, attitudes and behaviour is towards sustainability. A longitudinal study could shed some light on this problem on any changes in their perceptions and behaviour so that tertiary institutions could be innovative to alter or upgrade the curricula to include courses on sustainability, to increase the awareness of utilising resources wisely.

## *Current understanding*

Peoples' awareness about sustainability and understanding of the complexity of issues presented by modern lifestyles has grown overtime. This awareness

allows people to respond positively towards the ecological and environmental problems the world is currently experiencing [1]. Bearing the foregoing in mind, a survey was conducted to explore and understand students' perceptions and attitudes towards environmental sustainability and other related issues in New Zealand. The 2010 study is the second, the first having been executed at Unitec Institute of Technology in March 2007. The objective of this longitudinal study is, therefore, a comparison of the results of both studies to identify trends in student approaches to sustainability issues. Since student perception is under-researched in this area, it is an important step-up initiative to change of their behaviour and to initiate intentional sustainable environmental awareness actions [2].

In general, this study has revealed recognition by the students (respondents) of the positive and long term impact of sustainable development on the environment. It was also found that demographic factors affect an individual's thinking patterns to a great extent. The social and cultural impacts were found to be positive as well, but were on the low side. The results show the development of a positive trend in terms of thinking and the behaviour towards environment conservation when comparing the 2007 and 2010 surveys.

The decline of ecology on a global scale has proved that the ever increasing population as well as free trade policies have resulted in the exploitation of resources and increased effluence stresses on a scale never experienced in the world's existence before. Unrelenting economic demands, increasing inequity among nations, continuous degrading of the quality of life, increased costs to produce food worldwide, erratic changes in the climate and deteriorating atmospheric

conditions are some of the other environmental sustainability problems the world currently face [3].

Anecdotal evidence is that the industrialised nations and their consumers use more than 80% of the limited available natural resources, which has led to consumption inequality amongst nations across the globe. Sustainable consumption, however, is expected to minimise the environmental damage, through socially equitable consumption patterns as it allows every individual to consume only what their fair share of natural resources is [4; 5].

### ***Background***

It is evident that the luxurious human lifestyles of affluent nations have led to severe environmental conditions such as soil erosion, desertification, water and air pollution as well as global warming [6]. With the development of civilisations over time, affluence and expectations of a comfortable life style has increased [7]. According to some researchers the planet's average temperature has increased by 0.5 degrees Celsius in the last century. Although the temperature increase seems small, it is a great change for the planet and the consequences are noticeable through the melting polar ice [8]. Other researchers are of the opinion that it is only a cycle that the earth is going through as it has happened before. Such extreme conditions, however, pose a great threat in the form of natural water-related disasters. Recent floods in Europe, Tsunamis in the Indian Ocean and Japan and Hurricane Katrina could perhaps be the result of a disrupted environmental atmosphere [6]. The natural calamities and floorings have become relatively frequent across the globe and are very capable of shaking the foundations for the sustainable development of the small and developing nations in particular [9].

The precariousness of the environment is now evident to even the most casual observer. The global environment is changing rapidly and more dramatically than ever expected. Climate has become unpredictable with the UK and USA experiencing the coldest winter in a hundred years during their last winter season, and this has far reaching effects on people across the world [2]. Population growth, increased industrialisation and improper utilisation of resources have negatively impacted on the ecosystem. This has resulted in a disrupted natural cycle of global resources and have destabilised environmental sustainability [10]. Scientists also fear that, if unchecked, the impact of unpredictable climatic

conditions will be disastrous and the ecosystems and human society will not be able to cope with it much longer [7]. This is significant because health and the quality of life are greatly influenced by the sustainability of the environment we live in [10].

According to the World Wildlife Fund poor life conditions, such as poverty, starvation, lack of significant health care facilities, deprived education and underprivileged economic opportunities is often seen as a reason for a high human fertility rate and further strains the natural resources which will eventually diminish. The relationship between these conditions and sustainability needs more research in order to understand its effects. Technological advancements and increased human knowledge, have given us the capability to modify the environment. The human-nature relationship has also changed irreversibly according to [11]. Furthermore, the social-sciences do not yet fully understand what people's attitudes towards sustainability are.

It is not clear how people make decisions concerning environmentally 'friendly' behaviour, and it is also unclear whether or not there are any voluntary modifications in their behaviour in relation to environmental issues. The Unitec research project was an effort to contribute to the understanding of people's attitudes towards sustainability and the environment, how they approach environmentalism, water conservation, energy conservation, recycling, reducing waste (e.g. composting) and using green energy sources (e.g. solar and wind power). The research also attempted to identify the differences between different groups of students in terms of their attitudes and self-reported behaviours, if any.

### ***Sustainability***

Sustainability can be defined as the preservation of the global resource base through conservation of natural resource consumption. Put differently, sustainability is utilizing the natural resources wisely and to meet the necessities of people's lives, considering the need for the resources for the future generations to survive [12]. It also emphasises the importance of a clean environment and protection of the natural assets available to the worlds' population.

According to [13] sustainability is an "economic, social, and ecological concept" that was derived from the term sustainable development and includes conservation of natural resources through recycling, waste and water management, using renewable energy resources and

developing environmental friendly land and property assets. However, for modern human beings, living involves using the non renewable resources [14]. For example the amount of raw materials like coal or oil which is available, is limited and is non renewable after use. This makes the conditions of sustainable consumption controversial, because it necessitates the need of substituting some alternatives for the non renewable resources to perform similar functions [15]. This leads to the necessity that society must only use resources that can be regenerated [16].

There are four equally important and key aspects of sustainability. This emphasises that people perceive sustainability differently under the influence of societal, environmental, cultural and financial factors [16]. There is extensive literature about the difficulties to understand human behaviour and attitudes towards the environment, especially behaviour regarding general and routine activities [3]. Many studies have been restricted to direct human behaviour related to the environmental responsibility of individuals in daily household activities, without considering any external influences such as their educational and political actions. It is also argued that indirect or unintentional activities have a much bigger and wider impact on environment, than any of the small individual efforts [17].

Research that focuses on the societal consumption perspective is an area least explored in the literature [4]. The social groups and networks that people relate to, influence their decisions and approach towards environmental problems, [3]. People who are sociable and friendly have positive interactions with others and make positive contributions to their neighbourhood making it more affable and organised. Positive community relationships have a major role to play when dealing with the environmental crises [2]. People in a community get influenced by other people's actions, so when one person or a small group of people change their ways to eco-friendly, others tend to learn by their examples and start following.

Influencing other people's behaviours through setting personal examples proves to be more significant than to force it through confrontation or litigation [2]. In fact, the process that assists a behavioural change is very intricate. According to [18] directing human behaviour towards improved environmental performance and sustainability is not just a simple matter of providing information and policy prescriptions but a complex socio-cultural process. It will require understanding of

the contexts that form, shape and reshape habits of thought and action." Therefore, a joint effort by communities is very important in order to attain the environmental sustainability as there are relatively very few problems that can be effectively addressed through individual effort.

A fair amount of planning guidelines and policies are required to implement the principles of sustainability in a community [19]. Conventional systems of education do not provide any training to students that may help in developing solutions to sustainability issues and to deal with ecosystem problems on a global scale. Environmental issues have several aspects and cannot be addressed by the traditional and conventional theories. It needs professional guidance from experts on the subject and a positive approach towards environmentalism [7]. There is an increasing influence by governments across nations to mainstream sustainability in the educational institutions with an emphasis on developing people's aptitudes to construct a sustainable society [20]. The current literature also discusses the importance of students' learning about sustainability. However, much less is known about what they actually know about the subject as the vast library database search using all the key words on the subject identified only a few articles.

### *Kyoto Protocol*

The Kyoto Protocol is an agreement made under the United Nations Framework Convention on Climate Change (UNFCCC). It was ready for signing by the parties on 11 December 1997 in Kyoto, Japan. Countries that ratified this protocol commit to reduce their emissions of carbon dioxide and five other greenhouse gases, or engage in emissions trading if they maintain or increase emissions of these gases. The Kyoto Protocol now covers 169 countries globally according to [21].

Global warming is a result of increased emissions of the greenhouse gases post-industrialisation and a significant amount of effort has been exerted to control the increasing atmospheric temperatures by creating awareness and outlining policies regarding the issue at a global level. The Kyoto protocol is an example of one of such efforts across the world. Its main objective is to control the greenhouse gasses emission in the atmosphere, by limiting the amount of gasses emitted by each country [8]. The consequences of global warming are already evident in the Pacific region in the form of higher sea levels, increased high tides,

unpredictable weather and salination of water and soil. New Zealand is a member of the Kyoto Protocol and the United Nations Framework Convention on Climate Change [22].

### *Attitudes and Perceptions*

In order to determine the inevitable effects of sustainability issues on a population and people perceptions about it, it is important to understand their reactions and analyse their attitudes towards sustainable development and environmentalism [23].

An attitude can be defined as an individual assessment of an object of thought in the person's mind towards people, environment, situations or ideas [24]. It can be very similar to belief but has a component of evaluation. Understanding people's perceptions and their approach towards sustainability, would allow us to understand if they support or oppose the 'green' behaviour [25].

Based on the literature, it could be stated that the term sustainability is developed from sustainable development of the natural resources available to humans. This involves keeping a check on current consumption patterns and saving the resources and assets for future generations.

The majority of sustainable development programmes are set up with the objective of changing individual attitudes and approaches towards sustainability and conservation of natural resources. It also includes a vision to create a society where people consider and evaluate the consequences of their actions based on the long term impact on environmental well being [26].

### *Research Question: Goal of This Paper*

What are the perceptions and attitudes of tertiary students towards environmental sustainability? This paper focuses on a comparative analysis of tertiary student surveys executed in 2007 and 2010 to understand student approaches and current trends towards sustainability. The focus is on the factors which affect their 'green' behaviour, and how perceptions are formed, with specific consideration to the demographic factors. A discussion of similarities and differences of opinion which were identified between the two groups is also focused on. The research is based on the assumption that positive attitudes lead to positive behaviour and aims to establish what people's attitudes towards sustainability and the environment are. The goal is to understand whether there are differences between students in

terms of their attitudes and self-reported behaviour and how tertiary institutions could be innovative in their curricula.

### *Methodology*

#### *Research Design*

The design of the questionnaire and the number of responses collected in the form of the two surveys enabled a quantitative research approach. A quantitative approach meant that the results were unbiased and irrelevant to the circumstances under which the research was carried out. The comparative analysis of the respondent's perceptions and attitudes as well as similarities and variation in their thinking patterns was possible due to the longitudinal nature of the research. A deductive research approach was followed to test the following hypothesis:

Null hypothesis: the average scale of each education level of the respondents is equal regarding the three significant questions in factor two (culture and social). This means that the researchers wanted to determine whether there were any differences between these averages.

Alternative hypothesis: There is at least two averages which are not equal (implying that differences exist between the averages).

The target population was tertiary students studying at Unitec in Auckland, New Zealand. The questionnaire distributed in 2007 resulted in 132 usable questionnaires. In 2010 the same questionnaire was used and distributed again and 92 usable questionnaires were returned.

The questionnaire was distributed to undergraduate and post graduate students studying business at Unitec. The choice of business students was deliberate because the researchers believe they will obtain a cohort of respondents with similar income, occupation and age in addition to materialistic aspirations. In future some of these students may perhaps become senior managers who could have a deciding standpoint on these issues for the business they would be employed by or associated within future.

The identity of respondents was not required and the respect for confidentiality and preservation of anonymity was upheld throughout the process of gaining data. Furthermore no harm, cultural or social sensitivity occurred in the data gathering process. There was also no conflict of interest and the

intellectual and cultural property ownership of respondents was respected as well.

### Questionnaire Design

The questionnaire constituted 83 questions and for responding purposes, a Likert scale ranging from 1 “very strongly disagree” to 7 “very strongly agree” was used. Important aspects, including views of people towards the environment, culture, self feelings towards life regarding money and health and interaction of humans with natural resources were included in the questionnaire. Six questions focused on the personal information of the participants in the survey.

### Data Collection

Questionnaires were distributed in the classes for completion by class representatives. Students then completed the surveys anonymously and returned it to their class representatives without the lecturer being present. Participation of all business students who participated in the study was voluntary by means of their informed consent and any student could withdraw at any time. Questionnaires are locked in the primary researcher’s cabinet at Unitec for a period of five (5) years.

### Findings

The data was entered into an Excel spreadsheet and thereafter transferred into SPSS to obtain descriptive statistics and to apply statistical tests as well. Results were analysed using the SPSS package. The researchers executed factor analysis as well and based their research questionnaire on six factors. Only three factors are discussed in this paper.

**Factor one** includes 11 questions all related to saving energy and caring about the environment. From these 11 questions, only three of the participants’ views were consistent and are more towards agreeing with what had been asked. The rest are not significant; because the standard deviation was high, which shows the variation in the views of the respondents. Respondents’ views were more towards having a good social life with other cultures. At the same time, however, it was also established that some of the respondents revealed that there were barriers regarding different cultures.

**Factor two** included six questions which related to the tradition and cultures and how respondents feel about it. It is interesting to note that in most of the questions

which related to this factor, the participants agreed, except where the standard deviation was more than 1.1 which was high. This shows that views vary around the average for some of the questions. It also meant that there were differences between age groups regarding the respect for traditions, cultures and way of life of other nations.

**Factor three** included five questions which were related to how humans deal with nature. All these questions were related, but there was no significant question in this factor. The mean was either less than 5 or if it was greater than 5, the standard deviation was very high. The results revealed that respondents try to link their attitude to saving energy and the environment, but also have a social life regarding other traditions and cultures as well.

TABLE 1 COMPARISON BETWEEN THE SIGNIFICANT QUESTIONS IN FACTOR 1 AND FACTOR 2

Question	Average of 2007 data (sample size 132)	Average of 2010 data (sample size 92)
Factor one		
1) I have an obligation to save energy where possible (Q24)	5.6	5.4
2) I do what I can to conserve natural resources (Q25)	5.4	5.4
3) I recycle whenever possible (Q27)	5.7	5.5
Factor two		
1) I should have respect for traditions, cultures and ways of life of other nations (Q19).	6.1	6.4
2) I like to learn more about other countries (Q20)	5.9	6.2
3) I like to know more about other cultures and customs (Q22)	5.8	6.1

In **Table 1** above, for factor one, it was evident that there were similarity in the answers for 2007 and 2010, for factor two (**Table 2** below).

TABLE 2 ANOVA FACTOR 2 – NULL HYPOTHESIS TEST

		Sum of Squares	df	Mean Square	F	Sig.
We should have respect for traditions, cultures and ways of life of other nations (Q19)	Between Groups	2.188	3	.729	.493	.688
	Within Groups	186.435	126	1.480		
	<b>Total</b>	188.623	129			
I would like to learn more about other countries (Q20)	Between Groups	1.501	3	.500	.361	.781
	Within Groups	174.569	126	1.385		
	<b>Total</b>	176.069	129			
I would like to know more about other cultures and customs (Q22)	Between Groups	4.044	3	1.348	.964	.412
	Within Groups	176.149	126	1.398		
	<b>Total</b>	180.192	129			

The means were more than 6 for 2010 data which meant that respondent's views were more towards having a good social life with other cultures. For the 2007 data collected it was almost 6. These figures imply that in 2007 some respondents might have experienced some barriers towards different cultures.

The purpose of applying an ANOVA is to test the following hypothesis:

Null hypothesis: The average scale of each education level of the respondents were equal regarding the three significant questions in factor two (culture and social). Therefore the researchers wanted to determine whether there were any differences between these averages.

The alternative hypothesis: It showed that there were at least two averages which were implying that they were not equal (there are therefore differences between the averages).

The researchers used the ANOVA table (**Table 3** below) for the three questions which was significant for the respondents in 2007. However, observing the p-value, the null hypothesis was not rejected. The result is that all the respondents with different education levels responded the same towards the three questions.

The results were very similar for the differences between the different age groups (average scale of each group). The 2007 data showed that there were no differences between the average scales for each age group. It may therefore be deducted that the average scale for the age group under was 20 years and was similar to the average scale of the age group 20-39 years as well as the 40-59 years age group regarding the respect for traditions, cultures and way of life of other nations. The result was the same regarding their views about being willing to learn more about other countries. The last question specifically focused on their willingness to know more about other cultures and customs.

TABLE 3 ANOVA SECOND FACTOR

		Sum of Squares	df	Mean Square	F	Sig.
We should have respect for traditions, cultures and ways of life of other nations	Between Groups	2.542	2	1.271	.868	.422
	Within Groups	186.081	127	1.465		
	<b>Total</b>	188.623	129			
I would like to learn more about other countries	Between Groups	1.082	2	.541	.392	.676
	Within Groups	174.988	127	1.378		
	<b>Total</b>	176.069	129			
I would like to know more about other cultures and customs	Between Groups	3.209	2	1.605	1.151	.319
	Within Groups	176.983	127	1.394		
	<b>Total</b>	180.192	129			

It is interesting to note that the views of the 132 respondents of the 2007 survey were similar for different nationalities, gender, occupation and age groups.

The researchers also executed similar tests for the data collected for the 2010 survey, where the survey yielded 92 respondents. The only result that is different is the test for the null hypothesis about the differences between age groups regarding the three questions of the second factor. It is interesting to note that regarding question 19 which stated: "We should have respect for traditions, cultures and ways of life of other nations" resulted in a P-value which was  $< 0.05$ , which consequently led to the rejection of the null hypothesis. It confirms that there were differences between age

groups regarding the respect for traditions, cultures and way of life of other nations.

TABLE 4 ANOVA AGE

		Sum of Squares	df	Mean Square	F	Sig.
We should have respect for traditions, cultures and ways of life of other nations	Between Groups	17.597	2	8.798	11.436	.000
	Within Groups	67.700	88	.769		
	<b>Total</b>	85.297	90			
I would like to learn more about other countries	Between Groups	5.798	2	2.899	2.599	.080
	Within Groups	99.278	89	1.115		
	<b>Total</b>	105.076	91			
I have a strong desire for overseas travel	Between Groups	6.444	2	3.222	2.210	.116
	Within Groups	126.845	87	1.458		
	<b>Total</b>	133.289	89			
I would like to know more about other cultures and customs	Between Groups	13.348	2	6.674	5.590	.005
	Within Groups	106.261	89	1.194		
	<b>Total</b>	119.609	91			

The Tukey test (Table 5) was also applied and revealed that there were differences between age groups. There were, however, no significant differences between age groups 20-39 and 40-59 regarding traditions and cultures. It can be deduced that the younger generation had different values than those of the older generation regarding tradition and cultures.

Question 22 contained the following statement: "I would like to know more about other cultures and customs". The results showed that there were significant differences between the age groups in the 2010 survey, where the P-value was <0.05. The response in the age group under 20 years old was different from the other 2 groups regarding their willingness to know more about other cultures. There

were, however, no significant difference between the views of the second and the third age groups.

### *Correlations between the first factor and the second factor*

In selecting the three questions from the 2007 data regarding factor 1 and the three questions from factor 2, a correlation coefficient matrix was applied to determine the strength of the relationship between these two factors. It was found that there were no significant relations between Q19 which stated "We should have respect for traditions, cultures and ways of life of other nations" and Q25 which stated "I do what I can to conserve natural resources" and Q27 which stated "I recycle whenever possible". The results also showed that Q25 and Q27 have no relationship with the three questions of factor 2.

TABLE 5 TUKEY HSD

Dependent Variable	(I) How old are you?	(J) How old are you?	Mean Difference (I-J)	Std. Error	Sig.
We should have respect for traditions, cultures and ways of life of other nations (Q19)	under20	20-39	-2.437*	.517	.000
		40-59	-2.529*	.549	.000
	20-39	under 20	2.437*	.517	.000
		40-59	-.093	.237	.919
	40-59	under 20	2.529*	.549	.000
		20-39	.093	.237	.919
I would like to know more about other cultures and customs (Q22)	under20	20-39	-2.153*	.644	.003
		40-59	-2.059*	.684	.009
	20-39	under 20	2.153*	.644	.003
		40-59	.094	.295	.946
	40-59	under 20	2.059*	.684	.009
		20-39	-.094	.295	.946

### Contribution

The 2010 data revealed the relationship between all the questions (regarded as significant) from factor one and two to have a positive significance between them. It can therefore be deduced that in 2010 respondents linked their attitude to saving energy and environments with their attitude to have a social life with other traditions and cultures.

The value and benefits is derived from the fact that this is the second study (therefore longitudinal), the first having been executed at Unitec Institute of Technology in March 2007. The value therefore comes from the comparisons resulting from the 2010 and 2007 data to identify trends in student approaches to sustainability issues. It will also enable international comparisons of similar studies not only of students, but other stakeholders in the wider society as well.

### Recommendations

It is recommended that tertiary institutions should have at least one session in all their courses on sustainability that is linked to the subject being studied. Business students should receive information on how they could save energy and also be informed what the monetary value could be, should they affect these savings.

Students studying in other disciplines such as arts or languages could perhaps also be made aware of the importance of recycling.

### Practical Implications

This research project was aimed at determining the trends and attitudes of tertiary students taking business courses at Unitec Institute of Technology in Auckland. The results enabled the researchers to identify several determinants of sustainability behaviour of students regarding sustainability issues. The students will gain knowledge in regards to environment sustainability and the environment in the long term will be saved for future generations. The innovative recommendations could be utilised to formulate future strategies to encourage sustainable consumption and also initiate international comparisons as well. The survey participants strongly associate the concept of sustainability with their environment. It also emphasises the need to link sustainable development with the economic, social and cultural factors and perception of students in an attempt to understand the complications and the challenges about this topic. Students from different cultures and varied personal and professional backgrounds have different approaches towards sustainability. They feel differently about the environment and behave differently when it comes to 'green' behaviours. Despite the differences, there were many similarities that appeared to be consistent across the survey.

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### Author Introduction



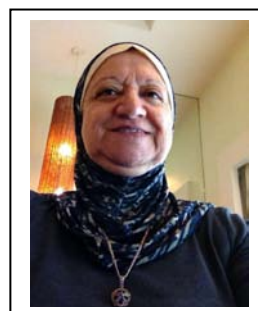
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